Backgrounder

Pilot Institute on Additive Manufacturing

On August 16, 2012, after a competitive process, the Administration announced the selection of a new consortium led by the National Center for Defense Manufacturing and Machining (NCDMM) to establish the National Additive Manufacturing Innovation Institute (NAMII).

As part of his plan to catalyze a nationwide network of regional manufacturing innovation institutes, President Obama also acted to launch an institute that would further U.S. capabilities in an important emerging manufacturing technology and to pilot principles and approaches to guide the design and operation of the NNMI. Five federal agencies — the Departments of Defense, Energy, and Commerce, the National Science Foundation, and NASA — jointly committed to invest in a pilot institute.

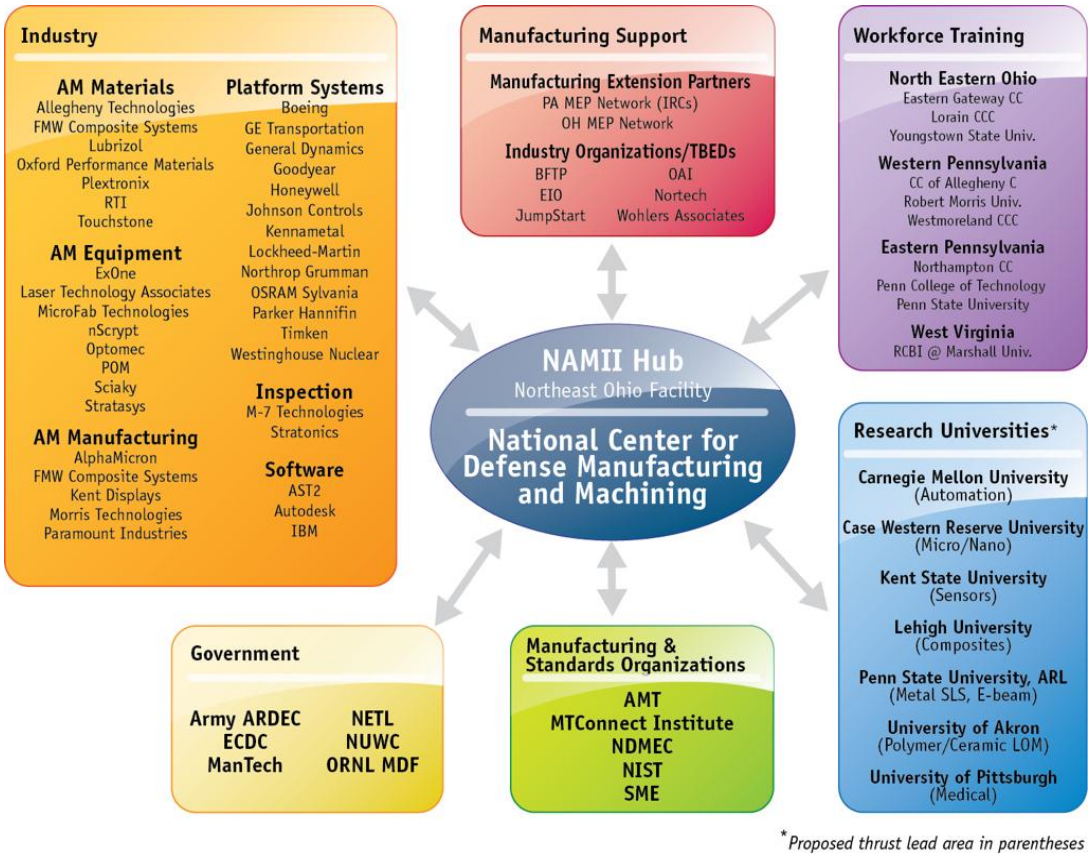
On May 9, 2012, the federal government issued a solicitation for proposals from teams led by non-profit organizations or universities to establish an Additive Manufacturing Innovation Institute. Issued in the form of a Broad Area Announcement by the Department of Defense, the solicitation sought proposals, including technical and business plans, detailing steps to accelerate research, development, and demonstration in additive manufacturing and transition technology to manufacturing enterprises within the United States.

The NAMII will provide the innovation infrastructure needed to support new additive manufacturing technology and products in order to become a global center of excellence for additive manufacturing. This pilot institute will bridge the gap between basic research and product development for additive manufacturing, provide shared assets to help companies, particularly small manufacturers, access cutting-edge capabilities and equipment, and create an environment to educate and train workers in advanced additive manufacturing skills.

Additive manufacturing (AM), often referred to as three-dimensional (3D) printing, is a new way of making products and components from a digital model, and will have implications in a wide range of industries including defense, aerospace, automotive, and metals manufacturing. Like an office printer that puts 2D digital files on a piece of paper, a 3D printer creates components by depositing thin layers of material one after another using a digital blueprint until the exact component required has been created. The Department of Defense envisions customizing parts on site for operational systems that would otherwise be expensive to make or ship. The Department of Energy anticipates that additive processes would be able to save more than 50 percent of energy use compared to today's 'subtractive' manufacturing processes

With a physical innovation hub in Youngstown Ohio, NAMII brings together a regional network of 14 research universities and community colleges, at least 40 industry partners and 11 non-profit organizations and professional societies. The coalition collectively pledged nearly $40 million in match to the federal investment, a strong indicator of commitment and potential for sustainable success.

For more information on the newly announced National Additive Manufacturing Innovation Institute, visit http://namii.org/.



Hub diagram with major founding partners

Technical Activities Plan for AM

Additive manufacturing projects will be selected through analysis of a National AM Roadmap, to be created collaboratively with government agency and industry participation. Projects will focus on applied research – bridging that critical gap between basic research and mature development work. Throughout each activity, threads will address sustainability, digital data (modeling and simulation, data driven), and educational outreach/workforce training. Other issues involving the supply chain, digital data, material and processing standards, evaluation of part quality, and cultural changes to the widespread adoption of AM will be addressed.

Educational Outreach and Workforce Development

NAMII will integrate workforce training and educational outreach activities as part of culture and vision for the institute. NAMII will offer extensive opportunities for students at all levels to participate in internships, for K-12 summer camps, and for secondary teacher and professor summer fellowships. NAMII will partner with community colleges and manufacturing professional societies to benchmark current curricula and then expand on the existing curricula and develop stackable certificate and degree models.

Engagement of Small – Medium Enterprise

NAMII will engage and assist SMEs to effectively deploy AM technologies and drive other small business benefits including workforce training, internships, access to the NAMII incubation hub for start-up company formation, and confidential assistance in assessing strategies for AM deployment within their business.

Sustainability Plan

NAMII's plan is both technically visionary and self-sustainable within three years. Costs for membership are significantly lower – thereby affordable - for a small business than for a large corporation. NAMII will identify and track performance metrics in partnership with the government agencies to monitor successfulness of the institute such as the number of new products introduced to the domestic market and the number of jobs created.